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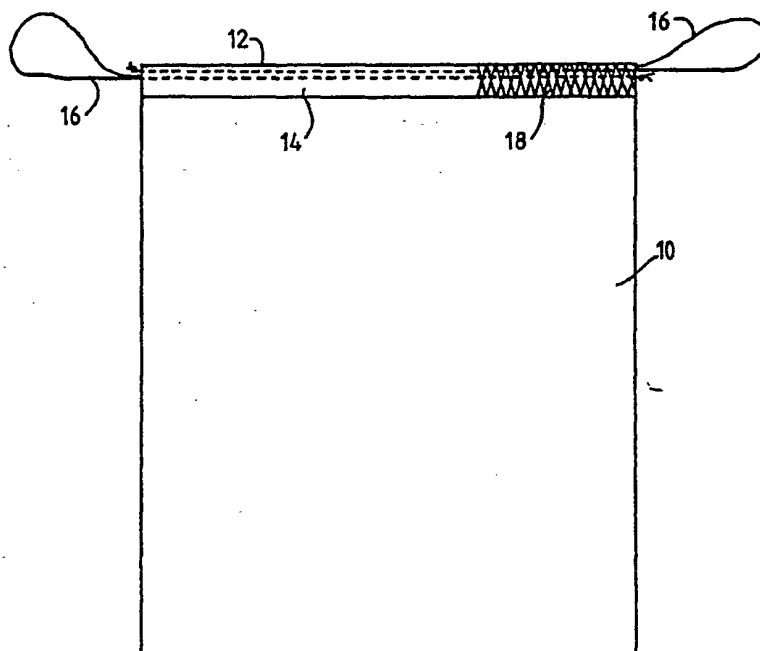
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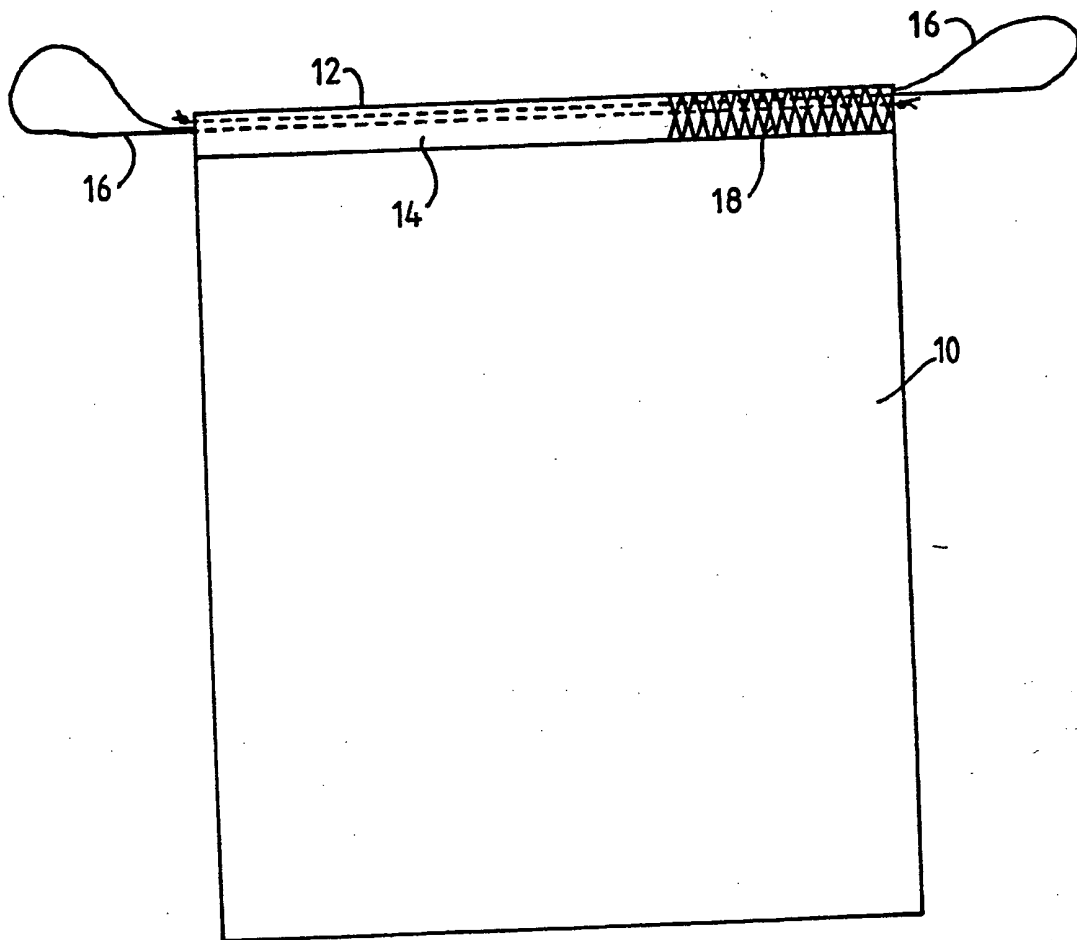
(54) Bags

(57) A waterproof bag (10) for collecting and disposing of organic wastes such as dog faeces or used nappies is made of biodegradable polymer film. The mouth (12) is provided with drawstrings (16) and adhesive sealing strips (18) (or touch-and-close fastening means) on the outside of the bag. Waste can be picked up using the bag as a glove, and the bag can be everted over the waste before tightening the drawstrings, bringing the adhesive strips into contact and sealing the bag ready for disposal. The bags are stacked with adjacent bags alternating in orientation to separate the adhesive strips.



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BAGS

This invention relates to bags, particularly to waste disposal bags, and especially to bags for the disposal of organic wastes.

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The invention includes all novel matter disclosed in the following description.

One aspect of the invention is concerned with providing a bag for
10 the collection and disposal of normally solid animal wastes, particularly the faeces of domestic animals and pets, and notably of dogs. These wastes are frequently a nuisance in public places, and a health hazard. An object is to provide a practical and effective means to enable such wastes to be hygienically picked up and
15 removed for disposal.

However, other organic wastes can also be collected and disposed of in a similar way by means of the invention. One example of such other wastes is used disposable nappies.

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According to one aspect of the invention the bag is provided with closure means and is biodegradable.

According to a further aspect of the invention a bag is provided with
25 closure means whereby the bag can be closed after eversion of the bag.

In a particularly preferred aspect of the invention, a person wishing to dispose of solid or semi-solid waste can wear the bag on the hand
30 like a glove or mitten, take hold of the waste through the bag wall, draw the neck of the bag forward over the hand and the waste together, and close the neck over the waste; so that the waste originally outside the bag is now within it, the hand originally inside the bag is now on the outside, and the bag is inside out, ie everted
35 relative to its original conformation.

The bag is preferably of a material that is impervious to liquid

water, and may comprise waterproof plastics film. The closure means would in general be difficult to make absolutely waterproof, and a degree of permeability to water vapour and other gases may be desirable during degradation of the contents of a used bag. The bag
5 may be transparent or translucent, so that any contents can be visually discerned, or may be opaque. It may be coloured, typically with an environmentally sympathetic colour such as green. It may with particular advantage be made of a biodegradable material, as described in more detail hereinafter.

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The closure to the bag can take many forms, and may comprise, separately, a first means for closing the neck of the bag, and a second means for fastening the closed neck. The actions of closing and of fastening may alternatively be combined in a single closure
15 means. Preferably, the bag is substantially sealed by the closure means.

The first, closing, means may comprise a drawstring, or a pair of drawstrings. Drawstrings may be located in guide means, such as a
20 tube or channel, around the neck of the bag. Alternatively to drawstrings, flaps or tabs may be provided at the neck of the bag.

The second, fastening, means can likewise take many forms. Contact or pressure fastening means are particularly preferred, especially those
25 that are effective in response to the action of the closing means, for example under the pressure exerted by the use of drawstrings to close the mouth of the bag.

Examples of fastening means are contact or pressure-sensitive
30 adhesives, or other touch and close fastening or bonding means. In a preferred arrangement, the fastening means comprise two components, which may be complementary, which are adapted to cooperate when brought together, but which are separately substantially non-adhesive. In an alternative arrangement, the fastening means are covered by a
35 mask which is readily removable when required for use.

Such fastening means are preferably located around the mouth or

neck of the bag, on the outside thereof, so that upon eversion of the bag, with the waste now inside, the closure means are brought together inside the mouth of the bag and close the mouth of the bag.

- 5 The invention extends to a pack of bags, wherein the bags are stacked and adjacent bags alternate in orientation such that mutually adhesive fastening means are separated. Bags may be stacked tops to toes, or face to face and back to back if complementary fastening means are provided on opposite faces of the bags.

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The most suitable materials for the bag are those that can be broken down completely to simple non-toxic waste products by the action of naturally occurring micro-organisms. This kind of biodegradation is preferred to other methods of degradation, such as the action of
15 light, which may require precautions to ensure adequate exposure to the degrading agency. Biological degradation through the action of micro-organisms can in general be expected to effect the degradation of the organic waste in the bag at the same time.

- 20 The presently most preferred materials for the bag are biodegradable plastics films comprising polymers or copolymers of 3-hydroxybutyrate repeating units. Particularly effective are linear copolyesters of 3-hydroxybutyric and 3-hydroxyvaleric acids, the molar percentage of the latter preferably being not more than 20%. Woven fibre bags of these
25 and similar polymers are possible but in general a film is preferred as providing a waste container with the better integrity.

- These polymers and copolymers are microbiologically digestible to carbon dioxide and water, especially in the presence of such materials
30 as faecal wastes, both aerobically and anaerobically, while their storage life in the unused state is good.

- A plastics film may be of a weight to be self-supporting, or may be supported on a base material. A thin coating on a paper base may be
35 sufficient to impart the desired integrity and water resistance, and may be obtained by dipping the paper in the polymer.

One embodiment of the invention is illustrated in the accompanying drawing, which shows diagrammatically a waste disposal bag in accordance with this invention.

5 The bag is essentially a waterproof plastics bag 10 made of biodegradable polymer film. It is intended for collecting the faeces of medium sized dogs. When empty and flat, as shown, it is about 250 mm deep and 200 mm wide. Other sizes may be provided for other uses; larger dogs, for example, may require an increase in the
10 dimensions by about 50 mm each side.

Around the mouth 12 of the bag is a channel 14, which is formed at the neck of the bag by folding back and welding the plastics film. In the channel run a pair of drawstrings 16.

15

The outside of channel 14 is coated with an adhesive 18, shown only in part, which may be covered by a removable strip (not shown) to prevent packed bags from sticking together. Alternatively, the channel on one side of the bag may carry a first component of a composite
20 two-component fastening system, and the channel on the other side may carry the second component of such a system. Other arrangements are possible, to ensure that unused packed bags are readily separable, while the mouths of the bags can be fastened closed when the bags are everted over waste material.

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To use the bag 10, the hand is placed inside it, and the waste, for example dog faeces, is picked up while wearing the bag like a glove. The mouth 12 of the bag is then drawn forward off the hand to evert the bag over the waste, so that the hand is now outside the
30 bag, and the waste inside it. The drawstrings 16 are now pulled to close the neck over the waste, and the adhesive 18, which is now inside the neck of the bag, seals the bag under the pressure of the drawstrings and holds it closed.

35 The sealed bag can then be carried away to be disposed of. This can be done in normal sewage disposal systems, in which both the bag and the contents can be biodegraded with no harm to the system.

Alternatively, the sealed bag can be placed with other household refuse and collected in the usual way for disposal in landfills where it and its contents will rapidly degrade.

- 5 While the invention has been described with reference to specific elements and combinations, each may be combined with any other. It is not intended to limit the invention to the particular combinations of elements suggested.

CLAIMS

1. A bag for the collection of normally solid organic waste, the bag being provided with closure means and being biodegradable.
- 5 2. A bag as claimed in claim 1 provided with closure means whereby the bag can be closed after eversion of the bag.
- 10 3. A bag as claimed in claim 1 or claim 2 wherein the closure means are adapted to substantially seal the bag.
- 15 4. A bag as claimed in any one of the preceding claims wherein the closure means comprise first means for closing the neck of the bag and second means for fastening the closed neck.
- 20 5. A bag as claimed in claim 4 wherein the first means comprise a drawstring.
6. A bag as claimed in claim 4 or claim 5 wherein the second means comprise contact or pressure fastening means.
- 25 7. A bag as claimed in claim 6 wherein the contact or pressure fastening means are effective in response to the action of the first means.
- 30 8. A bag as claimed in any one of claims 4 to 7 wherein the second means comprise two components which are adapted to co-operate when brought together but which are separately substantially non-adhesive.
9. A bag as claimed in any one of claims 4 to 7 wherein the second means are covered by a mask which is readily removable when required for use.

10. A bag as claimed in any one of claims 4 to 9 wherein the second means are located around the mouth or neck of the bag, on the outside thereof, whereby upon eversion of the bag the fastening means are brought together inside the mouth of the bag and close the mouth of the bag.
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11. A bag as claimed in any one of the preceding claims which is of a material impervious to liquid water.
12. A bag as claimed in any one of the preceding claims which is
- 10 of a biodegradable plastics material.
13. A bag as claimed in claim 12 comprising waterproof plastics film.
- 15 14. A bag as claimed in claim 13 wherein the plastics film is coated on a biodegradable base.
15. A bag as claimed in claim 14 wherein the base is paper.
- 20 16. A bag as claimed in any one of claims 12 to 15 wherein the plastics material comprises a biodegradable polymer or copolymer of 3-hydroxybutyrate repeating units.
- 25 17. A bag as claimed in claim 16 wherein the plastics material comprises a linear copolyester of 3-hydroxybutyric and 3-hydroxyvaleric acids, the molar percentage of the latter being not more than 20%.
- 30 18. A bag for the collection of normally solid organic waste, substantially as herein described with reference to and as illustrated in the accompanying drawing.
19. A pack of bags in accordance with claim 10, wherein the bags are stacked and adjacent bags alternate in orientation such that mutually adhesive fastening means are separated.

20. A method of disposing of solid or semi-solid organic waste, comprising wearing a bag as claimed in any one of claims 1 to 18 on the hand, taking hold of the waste through the bag wall, drawing the neck of the bag forward off the hand and over the waste, and closing the neck of the bag over the waste so that the waste is within the bag; and thereafter disposing of the bag containing the waste.
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Amendments to the claims
have been filed as follows

1. A bag for the collection of normally solid organic waste, the bag being biodegradable and provided with closure means whereby the bag can be closed after eversion of the bag, comprising first means for closing the neck of the bag and second means for fastening the closed neck.
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2. A bag as claimed in claim 1 wherein the closure means are adapted to substantially seal the bag.
- 10 3. A bag as claimed in claim 1 or claim 2 wherein the first means comprise a drawstring.
4. A bag as claimed in any one of the preceding claims wherein the second means comprise contact or pressure fastening means.
15
5. A bag as claimed in claim 4 wherein the contact or pressure fastening means are effective in response to the action of the first means.
- 20 6. A bag as claimed in any one of the preceding claims wherein the second means comprise two components which are adapted to co-operate when brought together but which are separately substantially non-adhesive.
- 25 7. A bag as claimed in any one of the preceding claims wherein the second means are covered by a mask which is readily removable when required for use.
- 30 8. A bag as claimed in any one of the preceding claims wherein the second means are located around the mouth or neck of the bag, on the outside thereof, whereby upon eversion of the bag the fastening means are brought together inside the mouth of the bag and close the mouth of the bag.

9. A bag as claimed in any one of the preceding claims which is of a material impervious to liquid water.
10. A bag as claimed in any one of the preceding claims which is
5 of a biodegradable plastics material.
11. A bag as claimed in claim 10 comprising waterproof plastics film.
- 10 12. A bag as claimed in claim 11 wherein the plastics film is coated on a biodegradable base.
13. A bag as claimed in claim 12 wherein the base is paper.
- 15 14. A bag as claimed in any one of claims 10 to 13 wherein the plastics material comprises a biodegradable polymer or copolymer of 3-hydroxybutyrate repeating units.
- 20 15. A bag as claimed in claim 14 wherein the plastics material comprises a linear copolyester of 3-hydroxybutyric and 3-hydroxyvaleric acids, the molar percentage of the latter being not more than 20%.
- 25 16. A bag for the collection of normally solid organic waste, substantially as herein described with reference to and as illustrated in the accompanying drawing.
- 30 17. A pack of bags in accordance with claim 8, wherein the bags are stacked and adjacent bags alternate in orientation such that mutually adhesive fastening means are separated.
- 35 18. A method of disposing of solid or semi-solid organic waste, comprising wearing a bag as claimed in any one of claims 1 to 16 on the hand, taking hold of the waste through the bag wall, drawing the neck of the bag forward off the hand and over the waste, and closing the neck of the bag over the waste so that the waste is within the bag; and thereafter disposing of the bag containing the

waste.